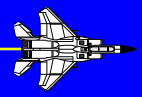
Preventing Musculoskeletal Illnesses through Ergonomics

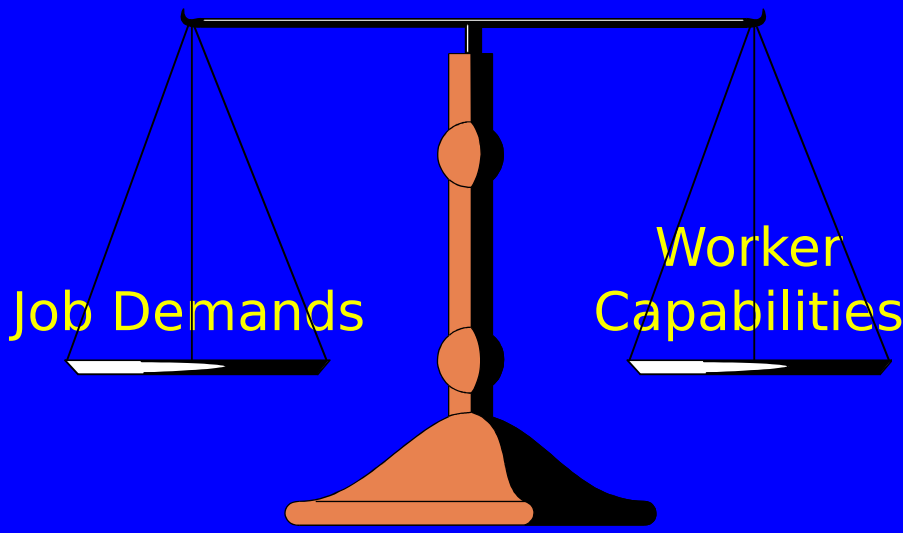
Maj Katharyn A. Grant, PhD, CPE, PE
Chief, Ergonomics Function
IERA/RSHE
DSN 240-6116, Commercial (210)



Overview

- What is Ergonomics?
- Why is Ergonomics an AF concern?
- What is the AF doing about Ergonomics?

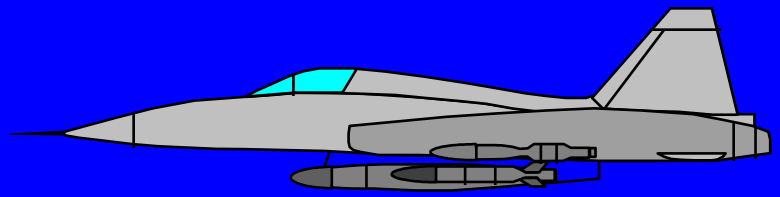
What is Ergonomics?



Goals: Improved
- Productivity
- Safety
- Health
- Job Satisfactio

Ergonomics is the science of designing jobs for PEOPLE

Ergonomics is Not New



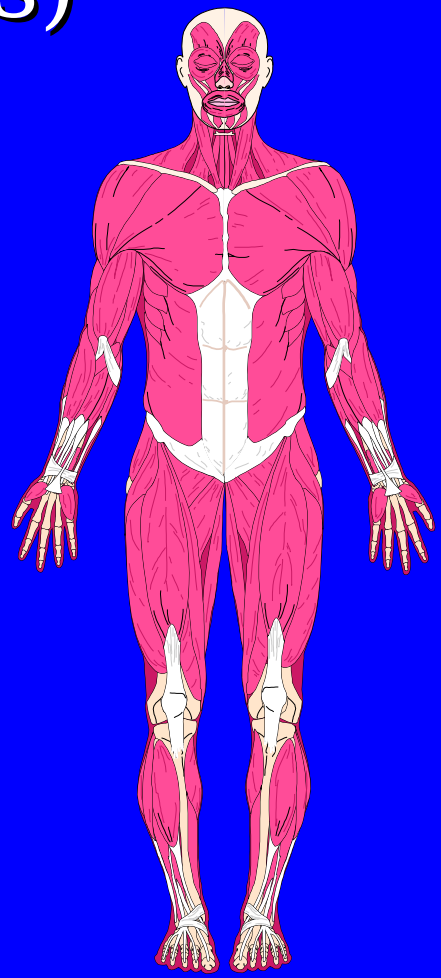
Early emphasis:
Improving pilot performance

Recent interest:
Improving worker health and productivity

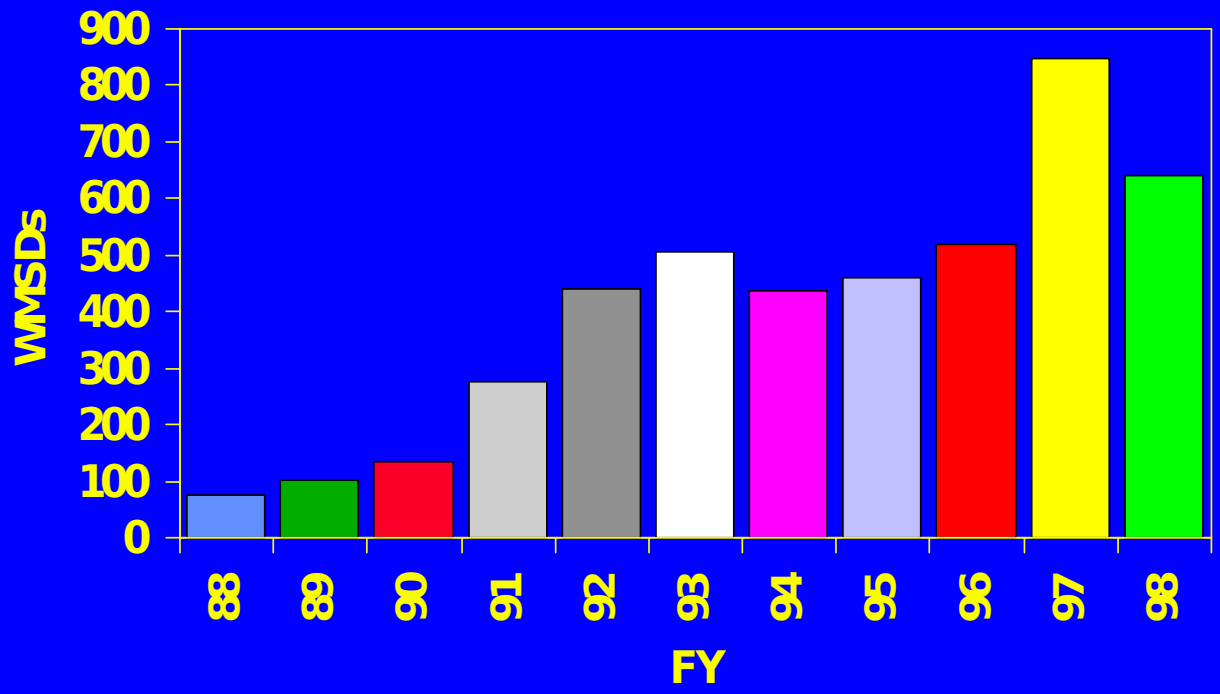
Ergonomics Can Prevent Work-related Musculoskeletal Disorders (WMSDs)

WMSD Examples:

- IV Disc Disorders
- Low Back Pain
- Carpal Tunnel Syndrome
- Ganglion Cyst
- Tenosynovitis
- Epicondylitis
- Thoracic Outlet Syndrome
- Rotator Cuff Tendinitis
- Bursitis
- Raynaud’s Syndrome



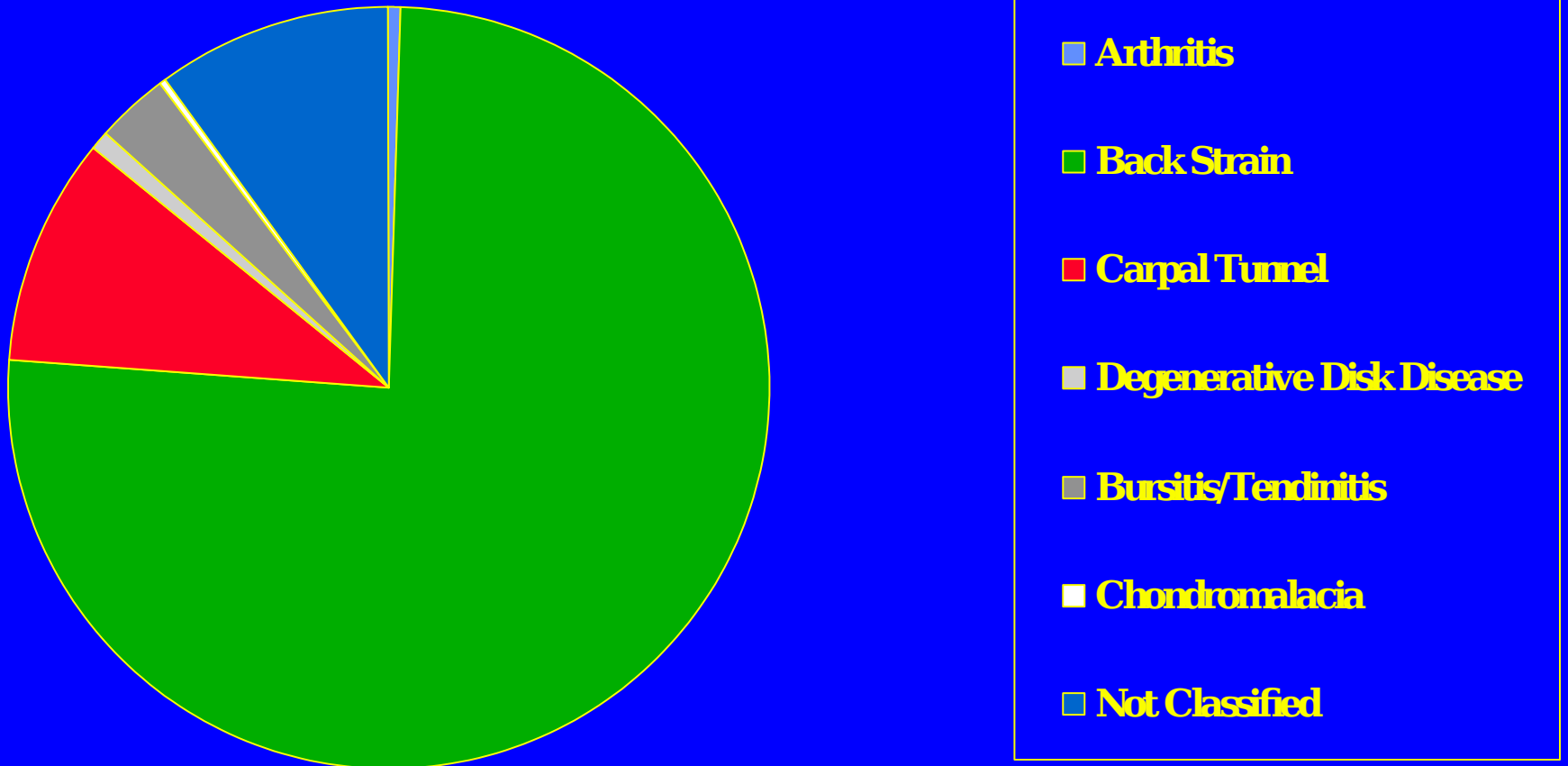
The Current Situation



Musculoskeletal Disorders on the Rise!

Source: AF Occupational Illness Data Registr

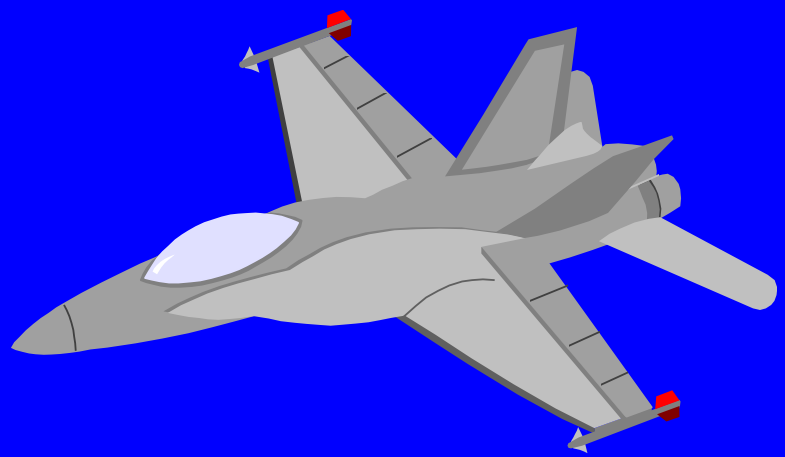
WMSDs Cost the AF!



FY 98 FECA Total = $46.9 Million

High Risk Job Categories

- Sheet metal workers
- Electricians
- Woodworkers
- Mechanics
- Office workers
- Commissary workers



What Factors Contribute to WMSDs?

Routine Exposure to:

- ✔ Forceful Hand Exertions
- ✔ Repetitive Movements
- ✔ Fixed or Awkward Postures
- ✔ Contact Stress
- ✔ Vibrating Tools
- ✔ Unassisted Frequent or Heavy Lifting

Force

Aerospace Ground Equipment

Repetition

Commissary

Awkward Postures

Fire Truck Maintenance

Dental

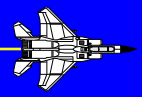
Combination

Flight Operations

Structural Maintenance

Ergonomics Program Drivers

- **DoD Ergonomics Policy (4 Feb 97)**
- OSHA compliance and regulatory activities
- ESOH TPIPT Needs
- IG inspection activities



Our Customer's Needs

- √ Integrate into existing OSH system
- √ Task based
- √ Design for junior level technicians
- √ Multipurpose
- √ Flexible
- √ Scientific basis
- √ Menu of control options
- √ Prioritization scheme
- √ Provide cost/benefit data
- √ Design for automation
- √ Contract or In-House

AF Ergonomics Program Elements

Workplace Analysis

Hazard Prevention and Contr

Health Care Management

Education and Training

Program Evaluation and Review

Workplace Analysis

- Passive Surveillance
- Active Surveillance
- Job Analysis

Workplace Analysis

Passive Surveillance

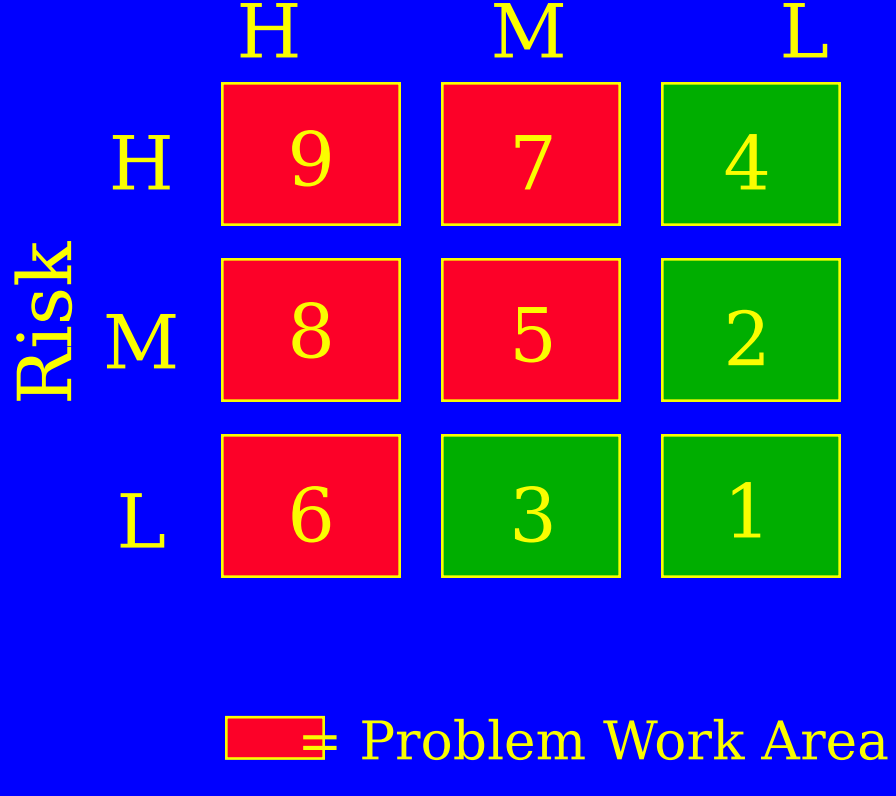
An unsophisticated first step in the problem identification process

- Review AF Form 190 for WMSDs
- Review injury/illness logs for WMSDs
- Conduct risk factor survey as part of annual JSA

Workplace Analysis

Job Requirements/Physical Demands Survey

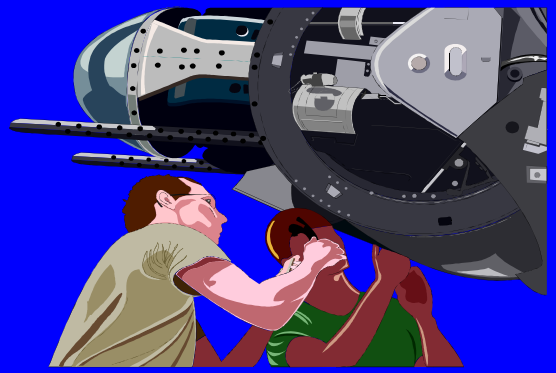
- Administered by Public Health
- Prioritizes jobs for further evaluation based on risk factors and discomfort
- Allows workers to participate in



Workplace Analysis

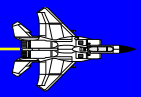
Job Analysis

Level I Guide for
Administrative Tasks



Level I Guide for
Maintenance/Inspection
Tasks

Level I Guide for
Warehouse & Service Tasks



Level I Guides

- Task based “How To” guides
- Designed for junior BE technician
- Based upon “pattern matching”
- Menu of realistic control options
- Metrics to measure program

Level I Guides

Component	Used to:
Ergonomics Assessment Checklist	→ Identify Hazards
Ergonomics Assessment Summary Report	→ Prioritize Hazards
Case Studies/ Problem Solving Matrices	→ Select Corrective Actions

Hazard Prevention and Control

- Primary emphasis on engineering controls
- Information on cost, productivity, quality impacts provided to system planners/designers
- Administrative controls may be acceptable as interim approach
- AF policy prohibits use of back belts, wrist splints, etc., for

Education and Training Resources

- BE Intro Ergo Course (USAFSAM)
- BE Advanced Ergonomics Course (USA
- PH Ergonomics Course (USAFSAM)
- ErgoEaser Training Module (DOE/PNL)
- Assorted Videotapes and CD-ROMs

Program Evaluation & Review

- Metrics currently under development (collaborative effort with EQM, University of Cincinnati, Auburn Engineers)
- Assess program elements individually to identify specific strengths and weaknesses
- Use as a basis for continuous improvement

AF Ergonomics Program Features

- Standardizes approach to WMSDs across AF
- Meets DoD requirements
- Interfaces with existing AFOSH system
- Designed for use by junior level technicians.
- Focuses efforts on high hazard areas

Near-term Enhancements

- Computerized Worksite Assessment Tool Development (collaboration with USACHPPM)
- Computer Based Ergonomics Training (collaboration with USAFSAM)
- “Success Story” development (collaboration with AFMC)

Success Requires a Team Effort